If considered in the "alternative" form, (resulting from the "Markush" grouping prior to the amendment above), each of the pending claims would be directed to a process using an aqueous composition which is free of ammonium ions, or is free of thiosulfate ions, or is free of a combination of ammonium and thiosulfate ions. As amended, however, the claims clearly are directed to a process using an aqueous composition which is free of ammonium ions, *and* is free of thiosulfate ions, *and* is free of a combination of ammonium and thiosulfate ions.

Rejection of Claims 1, 3-7, 10-16, 21-26 and 34-44

The Action has maintained the rejection of claims 1, 3-7, 10-16, 21-26 and 34-44 on the basis of 35 USC § 103 as being unpatentable over Greenberg et al. (U.S. Patent No. 3,993,845 – hereafter "Greenberg") in view of Mandich et al. (U.S. Patent No. 5,322,553 – hereafter "Mandich). In particular, the Action states that Greenberg teaches novel copper-silver metallic films prepared on transparent article by chemical replacement of copper for silver. This is accomplished by contacting a copper-coated article with a solution which comprises a silver salt, ammonia, and a complexing agent which promotes replacement but does not accelerate oxidation of the residual metallic copper in the film. The Action agrees with the Applicants' position that Greenberg "fails to teach a silver plating solution which is free of ammonia or thiosulfate ions." (Action, page 3).

Mandich is said to teach electroless plating compositions which do not contain ammonia, formaldehyde, cyanide, etc. (Action, page 3).

Thus, the Action concludes that it would have been obvious to combine the Greenberg silver plating solution with an ammonia-free solution as suggested by Mandich.

At the outset, the Applicants reiterate their position that Greenberg cannot properly be combined with Mandich on the basis that the two references teach directly away from one another. Greenberg clearly states, "[T]hiosulfate complexing agents are not employed since thiosulfate has been found to accelerate the subsequent oxidation of residual copper in the film..." (Column 3, lines 14-17). Likewise, Mandich clearly states, "An object of the present invention is to provide an electroless silver plating solution which uses a novel reducing agent system. *The system comprises the redox system thiosulfate-sulfite-sulfate.*" (Column 1, lines 44-47; emphasis added). If Greenberg explicitly seeks to employ a system which does not employ thiosulfates, why would one seek to combine it with a system that is based primarily upon the use of thiosulfates? Greenberg clearly teaches that one would not use the system disclosed by Mandich. Not only is there no suggestion in the art that the references should be combined, but rather, there is a clear explicit statement in Greenberg that the references cannot be combined.

Assuming for the sake of argument that one were to combine Greenberg and Mandich, despite the teaching to the contrary, the resulting combination would result in an impossibility. Greenberg relates to a system that employs an aqueous solution of an ammoniacal silver salt and a complexing agent. (Column 3, lines 9-11). Thiosulfate complexing agents are not employed. (Column 3, lines 14-17). Mandich, on the other hand, employs a thiosulfate-sulfite-sulfate redox system. (Column 1, lines 46-47). The bath does not contain ammonia or cyanide ions as a plating constituent. (Column 1, lines 50-52). Thus, the resulting combination of the references would yield a plating bath that contains ammonia and not thiosulfate (Greenberg) while at the same time contains thiosulfate and not ammonia (Mandich)! As such, any such combination would not be possible as the references mutually exclude one another.

Assuming, however, that a combination was made, the resulting plating bath would likely contain ammonia and thiosulfate. Of course this result would clearly fail to suggest the Applicants' claimed plating solution that explicitly avoids both ammonium and thiosulfate ions. In particular, currently pending claims 1 and 18, as amended, are independent claims which each relate to a process using an aqueous composition which is free of ammonium ions, thiosulfate ions and combinations thereof. Likewise, each of subject claims 3-7, 10-16, 21-26 and 34-43, as amended, depends ultimately from either claim 1 or claim 18. As such, each of claims 1, 3-7, 10-16, 21-26 and 34-43, as amended, is directed to a plating solution that explicitly avoids both ammonium and thiosulfate ions, as well as a combination thereof.

Even if a proper combination of Greenberg and Mandich could be made, the resulting solution necessarily would include at least one of ammonium ions or thiosulfate ions. Put simply, if a first reference requires component A and the absence of component B, and a second reference requires component B and the absence of component A, the combination of those references, at best would suggest the combination of components A and B rather than the absence of both. Since the Applicants' claims require the absence of both components (ammonium ions and thiosulfate ions), the combination of the Greenberg and Mandich references would not have suggested the subject matter of the Applicants' claims.

In view of the above, withdrawal of the rejection on these grounds is respectfully solicited.

Rejection of Claims 2, 17, 18 and 44

Claims 2, 17, 18 and 44 have been rejected under 35 USC § 103 as being unpatentable over the combination of Greenberg and Mandich and further in view of the admitted state of the art. Claims 2 and 17, as amended, are dependent claims which each depend directly from claim 1. Amended claims 18 and 44 are independent claims. Each of independent claims 1, 18 and 44, as amended, requires a process which employs an aqueous composition which explicitly avoids both ammonium and thiosulfate ions, as well as a combination thereof.

Greenberg and Mandich, as well as their combination, have been discussed above. The admitted state of the art simply adds that it is known to use a coating on copper substrates for protecting copper from oxidation. Since the Greenberg and Mandich references explicitly teach away from a combination, since any such combination would be an impossibility, and since even if they were combined, Greenberg and Mandich would not suggest the use of a process which employs an aqueous composition which explicitly avoids both ammonium and thiosulfate ions, as well as a combination thereof, their combination with the admitted state of the art would not have suggested the subject matter of pending claims 2, 17, 18 and 44, as amended.

In view of the above, withdrawal of the rejection on these grounds is respectfully solicited.

Rejection of Claims 8, 9 and 20

Claims 8, 9 and 20 have been rejected under 35 USC § 103 as being unpatentable over the combination of Greenberg and Mandich and further in view of Leahy et al. (U.S. Patent No. 4,067,784 – hereafter Leahy). Claims 8, 9 and 20 each depend, ultimately,

from amended claim 1, and therefore each relate to a process which employs an aqueous composition which explicitly avoids both ammonium and thiosulfate ions, as well as a combination thereof.

Greenberg and Mandich, as well as their combination has been discussed above. Leahy simply adds that it is known to incorporate a buffer and a surfactant into the plating solution. Since the Greenberg and Mandich references explicitly teach away from a combination, since any such combination would be an impossibility, and since even if they were combined, Greenberg and Mandich would not suggest the use of a process which employs an aqueous composition which explicitly avoids both ammonium and thiosulfate ions, as well as a combination thereof, their combination with the admitted state of the art would not have suggested the subject matter of pending claims, as amended.

In view of the above, withdrawal of the rejection on these grounds is respectfully solicited.

## CONCLUSION

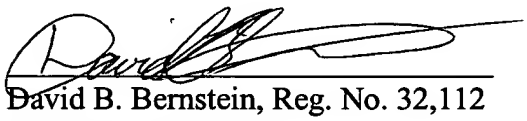
In view of the amendments and discussion herein, each of pending claims 1-18, 20-26 and 34-44, as amended, is believed to be in a condition for allowance. Reconsideration, withdrawal of the rejections, and passage of the case to issue is respectfully requested.

If upon receipt and consideration of this response, it is the Examiner's opinion that the case is not yet ready to pass to issue, it is respectfully requested that the Examiner contact

the applicants' undersigned attorney for the purposes of arranging an interview to expedite the prosecution.

Respectfully submitted,

MINTZ, LEVIN, COHN, FERRIS
GLOVSKY AND POPEO, PC



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